Case-Finiteness Contingencies in Child Language

A Senior Honors Thesis

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by

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Abstract

This study investigates the link between verb inflection and pronominal case forms in child language. Child English-speakers produce a mixture of finite and nonfinite verbs combined with nominative and accusative subject pronouns, as well as adult-like utterances. Our research aims to determine whether a grammatical connection exists between the pronoun case form of the subject and verb finiteness marking. Also discussed is the role of paradigm regularity in the representation of tense in child English and the bare forms that children prefer. The results of the three administered tests are discussed in light of nativist and constructivist theories of language development. Results correspond largely with nativist accounts of child syntax, which claim that the syntactic position of the subject and the abstract finiteness properties of the verb are responsible for assigning case. The results are inconsistent with constructivist accounts, which posit that case-finiteness contingencies are a product of co-occurrence of forms in the input, as a function of frequency. The administration of grammaticality judgment tasks controls the forms in the input, presenting an equal amount of grammatical and ungrammatical structures. Presented with the same amount of grammatical and ungrammatical utterances, children overall preferred the adult-like combination of nominative subjects and finite verbs.

Three grammaticality judgment tests were administered to each child in this study: the Pronoun Case test, the Verb Finiteness test, and the Case-Finiteness test. Each item in the tests consisted of two sentences, one adult-like and the other child-like in form. Children were asked to choose the sentence they believed to be correct. A total of 62 children participated in this study, 48 of whom passed all three tasks.

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Chapter 1: Introduction and Literature Review

Section 1.0: Case-Finiteness Contingency: The Puzzle

Children speak in their own way, which is at times very different from adult-like speech. One example of this is when child English speakers do not produce inflectional morphemes on verbs that are obligatory in adult English. For example, children aged 2, 3, and 4 years commonly produce utterances such as (1), which is adult-like, and (2), which is not adult-like. Because children produce both finite verbs, as in (1), and nonfinite verbs, as in (2), in the same developmental stage, it has come to be referred to as the Optional Infinitive (OI) Stage (Wexler 1994, 1998).

(1) *He **walks** across the street.*

(2) **Him **walk** across the street.*

The verb in sentence (2) does not have inflection and is called an optional infinitive. It is also important to note that the pronoun in this example is the accusative third-person masculine *Him* rather than the nominative third-person masculine *He*. It has been observed that during this optional infinitive stage, the child grammar will produce OI utterances with pronominal subjects in non-nominative case (Gruber, 1967). Subjects in adult English occur in nominative case, while children produce both accusative and genitive case subjects, in addition to nominative. The English pronominal case system is illustrated in Table 1.1.

Person	Number	Gender	Nominative	Accusative	Genitive	Dative
First	Singular	-	I	Me	My	Me
Second	Singular	-	You	You	Your	You
Third	Singular	Masculine	He	Him	His	Him
Third	Singular	Feminine	She	Her	Her	Her
First	Plural	-	We	Us	Our	Us
Third	Plural	-	They	Them	Their	Them

Table 1.1 English Pronominal Case System

This phenomenon is intriguing on its face because children seem to alternate pronominal case as a function of verb finiteness, as in the adult language, even though their finiteness marking is not yet consistently adult-like. That is, they seem aware of which pronominal forms belong with which verb forms, but they do not yet know that finite verb forms are obligatory in all matrix clauses. Schütze (1997) shows that there is a strong correlation of finite verbs with nominative case pronouns and nonfinite verbs with non-nominative case pronouns. Table 1.2 displays data supporting this observation from Loeb and Leonard (1991), cited in Schütze (1997) and Schütze & Wexler (1996), which shows that non-nominative case pronouns occur much more frequently with nonfinite verbs than they do with finite verbs. The data in the bottom-most left cell of Schütze's table takes 22 of its 26 instances from a single child. Looking at the remaining children, the data on the right side of the table, the appearance of accusative case subjects with finite verbs occurs less than 1% of the time.

Finiteness versus case for Loeb & Leonard's (1991) normal children				
	All 8 children		7 children	
	Verb form		*Verb form*	
Subject	*Finite*	*Nonfinite*	*Finite*	*Nonfinite*
he + she	503	95	436	75
him + her	26	58	4	28
% non-NOM	5%	38%	0.9%	27%

Table 1.2 Finiteness versus case for Loeb & Leonard's (1991) normal children, as referenced in Schutze & Wexler (1996), p. 672 and Schutze (1997), p. 222.

Section 1.1: Case Theory

To understand the relationship between case and finiteness, we will first discuss case theory. Chomsky (1981) distinguishes between morphological case and Abstract Case (which is conventionally capitalized), noting that morphological case consists of inflectional elements affixed to nominals which indicate their grammatical role with respect to the verb. Morphological case is evident in languages such as Latin and Russian, among others. Abstract Case Theory, on the other hand, posits that all overt noun phrases require abstract Case in order to appear. This is an attempt to account for every environment in which an NP is licensed, and is called 'The Case Filter' (Chomsky, 1981). The Case Filter is proposed to hold across all languages. In other words, all NPs must have abstract Case, but it does not have to be represented overtly as morphological case.

Grinstead (2000) notes that Case theory posits that overt subjects do not occur in infinitive clauses (that is, infinitive clauses that lack a clear sentence external Case assigner), as in (3) and (4). But overt subjects do occur in finite sentences, as in (5).

(3) John wondered [how Ø to leave].

(4) *John wondered [how Bill to leave].

(5) John left.

As mentioned in the previous section, it has been observed in child English that the child grammar will produce OI utterances with pronominal subjects in non-nominative case. What verbal morpheme is associated with nominative case for pronouns in subject position? Within Mainstream Generative accounts, there is some controversy as to which inflectional element (Tense or Agreement) is the case assigner, or whether both are Case-related. This debate is due to the fact that in English, as well as in many other languages, infinitives lack both tense and agreement specifications simultaneously. The connection between finiteness and nominative Case in subject position makes child language, which appears to lack consistent finiteness marking, an interesting arena to explore the predictions of Case Theory.

Is there a reason children specifically use accusative case pronouns in subject position in OI utterances as opposed to other case forms? This could be explained by a theory concerning what is known as the *default case*. An interesting scenario involving the default case comes from Schütze (1997) in the following example (6):

(6) What?? Me tell a lie?! Never!

Schütze suggests that in this example, the subject, *me*, is possible under the assumption that NPs must be both licensed and case-marked. Under this assumption, *me* is licensed but not case-marked. How is the subject, lacking a case feature, to be pronounced? The morphology finds a way to spell it out. Schütze proposes that the way it does so is using *default case*, which he defines as "the form used to express a syntactically caseless DP" (Marantz 1991). He also argues that since the default form in English is accusative, the morphology can only spell out the subject in (6) as *me*. He points out that this neither prevents the sentence from being produced ("crashes the derivation") nor gets filled in by a random choice of feature—so the nominative first person singular pronoun *I* cannot replace the accusative first person singular pronoun *me.*

Evidence that the default Case in English is accusative comes from Akmajian (1984) and is similar to the sentence in (6):

(7) a. What, me worry?
b. What! John get a job! (Fat chance.)
c. My boss give me a raise?! (Ha.)
d. Him wear a tuxedo?! (Sure.)

These sentences all share the same properties, including the use of the accusative case. Akmajian summarizes the syntactic properties of these sentences:

(8) A. The subject is accusative:
i. What! *Her* call me up?! Never.
ii. What! **She* call me up?! Never.
B. Tense and modals never appear:
i. *Him get*s* a job?!
ii. *Her {might} call me up?!
C. Sentential adverbs do not occur:
i. What! *Her unfortunately lose her job!

D. Rules such as Topicalization, which move constituents into COMP, apply in a restricted way:
    i. What! Us read that trash novel by tomorrow?!
    ii. What! *That trash novel, us read by tomorrow?!

Properties 8 a. and b. are particularly relevant to Case Theory in that the subjects of these sentences occur in accusative, plausibly default, case and in that putative Case assigners (tense and modals) cannot occur in them. This parallels the situation in child language, as described by Schütze, Wexler and colleagues, in that the occurrence of Case-marked pronominal subjects and finite verbs correlate.

Section 1.2: Theoretical Accounts: What is the Case-Finiteness Relationship in Child Language?

As we have noted, besides the combination of nominative case pronouns and finite verbs, which is present in adult-like utterances, it has also been observed that the use of non-nominative pronominal subjects and non-finite verbs tend to overlap (Schütze and Wexler 1996). Also, English-speaking children have been known to produce nominative case pronouns with nonfinite verbs, even though nominative case is not the default case in English. Schütze (1997) expands on this, asserting that "many English speaking children go through a prolonged period when they use both NOM and nonNOM pronouns as subjects, and both finite and nonfinite verbs, yet nonNOM subjects never appear with finite verbs." In other words, he claims that the combination "*Him walks across the street*," is never seen. The essential argument is that the presence of 3rd singular *–s* renders the use of non-nominative subjects impossible.

In an attempt to explain how children select pronoun case and verb inflection, Schütze and Wexler (1996) propose the Agreement/Tense Omission Model (ATOM).

This theory explains that during the optional infinitive stage, children can omit either tense or agreement (or both) from the sentence. If both are present in a sentence, then an adult-like utterance is produced. If agreement is absent but tense is present, nominative case is unable to be assigned, and the default case (accusative in English) surfaces in the subject position. If tense is missing but agreement is present, the nominative case is assigned and a nominative case pronoun is used. If both are absent, the genitive case is used in subject position. This is illustrated in Figure 1, assuming the relationships of morphology and syntax given in Figure 1.1.

INFL	description	examples
a. [+tns, +agr]	NOM assigned	*he cries*
b. [+tns, -agr]	NOM unassignable, default ACC surfaces	*him cry, him cried*
c. [-tns, +agr]	NOM assigned, agreement invisible	*he cry*
d. [-tns, -agr]	NOM unassignable, GEN assigned	*my cry, my crying*

Figure 1 Possible INFL feature and utterance types, assuming Figure 1-1 (Schutze and Wexler, 1996)

a. [+tns=present, +agr=3sg] –> -s
b. [+tns=past] —> -ed
c. [tns, agr] —> Ø

Figure 1.1 Assumed lexical entries that apply to Figure 1.

Schütze and Wexler conclude that the presence of a past tense feature does not imply the presence of agreement. They also claim that “the existence of non-NOM

subjects with past tense forms supports the theoretical claim that Agr, not Tense, assigns NOM case." In other words, when agreement exists in any given sentence, a nominative subject is produced, but when agreement is missing from the sentence, the default case (ACC in English) is produced. As further explained in Wexler, Schütze, and Rice (1998): "Agreeing verbs should show the fewest non-Nom subjects, in principle none at all. Ambiguous verbs should show some non-Nom subjects, more than the agreeing verbs, and uninflected verbs should show the highest proportion of non-Nom subjects."

To sum it up, the ATOM consists of three main assumptions: first, that finiteness drives case; second, that certain finiteness markers represent tense while others represent agreement; and third, the presence of 3rd singular *–s* renders non-nominatives impossible.

Rispoli (2005) claims that ATOM fails to explain why some children would produce the correct nominative form as a subject pronoun but still omit either agreement or tense. He proposes another theory, the Paradigm Building Approach, to complement the ATOM and to fill the unexplained gap. He explains that pronouns are defined by person, number, gender and case. Rispoli predicts that as a child improves in his control of finiteness, then his capacity for controlling case should also increase. Rispoli claims that pronoun type errors are caused by a child attempting "to use too many cells in an extended pronoun paradigm given the child's level of finiteness control."

Constructivists disagree more fundamentally with Schütze's assumption that grammatical principles operate in children's language and disagree that their development follows the Continuity Assumption of Macnamara (1982), Pinker (1984) and others, to the effect that children are using the same grammatical elements and computations as adults. Rather, they propose another theory, namely that case-finiteness

contingencies are a product of co-occurrence of forms in the input, as a function of frequency (Pine, Joseph & Conti-Ramsden 2004; Pine, Rowland, Lieven & Theakston 2005; Pine, Conti-Ramsden, Joseph, Lieven & Serratrice 2008). In other words, children should prefer nominative and finite verb combinations since this is what they hear from adults. On such an account, one must ask why children would ever use a non-nominative + nonfinite verb combination, since they do not occur in matrix clauses in the adult language. However, constructivists argue that it is enough that it occurs anywhere, such as in the small clause complement of a perception verb or as a gerundival sentential subject, as in (9)-(11), for the children to decide that it is a legitimate part of the language they are learning.

(9) I saw **him leave.**

(10) They heard **me running.**

(11) **My eating fast** bothered Daddy.

To be clear, the primary goal of the three constructivist papers cited seems to be less about demonstrating a connection between parental input and child output than it is about showing that non-nominative subjects can occur with 3rd singular *–s*, contra one of the claims of the ATOM. According to Schütze and Wexler (1996), the ATOM does not attempt to explain the occurrence of this particular combination because it is produced so little—less than ten percent of the time—and so can simply be dismissed as noise in the data. While the constructivists could be correct in their claim that 3rd singular *–s* may

occur with non-nominative subjects, this does not refute the central claim of Case Theory that finiteness drives case in subject position.

In summary, nativist theories account for the co-occurrence of a nominative case subject with a finite verb and non-nominative case subjects with nonfinite verbs as a function of either Case Theory in Minimalism (Chomsky 1995) or from occurrence in the specifier of S or IP in Head-Driven Phrase Structure Grammar (Pollard and Sag 1994) or Simpler Syntax (Culicover & Jackendoff 2005). Nativist theories of syntax predict that the syntactic position of the subject and the abstract finiteness properties of the verb are what determine nominative vs. accusative case, independently of co-occurrence in the input. Constructivists (e.g. Pine et al 2008), in contrast, take frequency of co-occurrence in the input to be the factor determining co-occurrence in child speech, and primarily dedicate their critique of nativist accounts of child English case-finiteness phenomena to demonstrating that 3rd singular *–s* may occur with non-nominative subjects.

In order to test nativist claims against constructivist claims, we will ask children to choose between sentences containing verbs that are finite by virtue of being marked with auxiliary *be* or past tense *–ed* and sentences that have bare stem verbs. In these sentences, all subjects will be adult-like nominative case pronouns. Given what is known about the finiteness marking abilities of children this age, we expect their performance to be variable and not adult-like. We will then give them a second test in which they have to choose between sentences, all of which have only adult-like finite verbs marked with copula *be* or 3rd singular *–s,* that have either a nominative case pronominal subject or an accusative case pronominal subject. Again, we expect variability in children's abilities to choose adult-like case forms. Because the inflectional markers are different on the two

tests, constructivist accounts predict that any correlation of inflectional marking judgments on test 1 and case judgments on test 2 should be completely accidental. Nativist accounts, however, predict that the variation in judgments of finiteness marking, independent of morphological realization, on test 1 with aux *be* and past tense *–ed*, should correlate with the variation in judgments of pronominal case on test 2, with verbs marked for finiteness with copula *be* and 3rd singular *–s*.

A point of contention may be whether gender has any influence on case-finiteness contingencies, according to Rispoli (1998a, 1998b) who reports higher error rates with feminine than with masculine pronouns. Gender plays no role in a purely syntactic Case theory according to Nativist accounts, which claim that the assignment of case is due to the syntactic position of the subject and the abstract finiteness properties of the verb. Since the case feature of a pronoun is independent of its gender, syntactic theory would predict children's judgments to be about the finiteness-case relationship in the stimuli, not due to preference for one gender over the other. This prediction contradicts the findings of Rispoli (1998a, 1998b) which showed children's error rates differing across forms that were unlike in gender.

Section 1.3: The development of finiteness morphemes

In order to determine whether or not finiteness development has any influence on pronoun case development, the growth of finiteness must first be examined. Following Culicover (1999), we assume that forms are initially learned as lexically-tied, memorized sequences and gradually are segmented into separate lexical units.

Yang (2005) discusses how children determine regularity of these units, and how they know what is systematic, or productive. According to Yang, children have a built-in learning component that recognizes productivity, which is the child's ability to consult their grammatical knowledge to morphologically change the words in their language. The mathematical formulation of this component is called the Tolerance Principle. If a word is not productive, then the child just memorizes it rather than trying to fit it into the grammar. The most common error that children make with the past tense in English, for example, is over-regularization. The regular rule is to add *–ed*, and children will apply this with irregulars before they memorize the distinctions. For example, young children know *walk* changes to *walk**ed***, and so they will automatically assume that *run* will change to *runn**ed***. They need to memorize the irregular change of *run* to *ran*.

Following Yang, we expect that more regular morphemes will be added to the lexicon, along with their syntactic properties, more quickly than irregular morphemes.

Section 1.4: Varying rates of tense morpheme development

Finiteness development in English-speaking children has classically been measured both cross-sectionally, in samples of children (e.g. De Villiers & De Villiers 1973) of different ages as well as longitudinally, in case studies of morpheme acquisition (e.g. Brown 1973). Brown proposed five stages in this acquisition process, each based on the child's mean-length-of-utterance (MLU). Table 1.3 illustrates the observed MLU for each stage of development.

Stage of Finiteness Development	Mean Length of Utterance (MLU)
I	1.75
II	2.25
III	2.75
IV	3.50
V	4.00

Table 1.3 Expected MLU for each stage of finiteness development

Brown (1973) is a longitudinal study of three children: Adam, Eve, and Sarah. The children were not the same chronological age when the study began; Eve was 1;6 and Adam and Sarah were both 2;3. Data was taken from Eve for one year, or until she was 2;6, and data was taken from Adam and Sarah for 5 years or until they were 7;3. The test was designed to study the acquisition of fourteen grammatical morphemes. De Villiers & De Villiers (1973) is a cross-sectional study involving 21 children ranging in age from 1;4 to 3;4 years. The study was designed to follow up and confirm the results of Brown (1973). Each study involved the analysis of spontaneous speech samples in order to confirm the presence or absence of each of the fourteen morphemes in obligatory contexts.

Ricci (2009) also focused on finiteness development, but rather than eliciting spontaneous speech samples, a grammaticality judgment test was used. The 106 children who participated in the study done by Ricci were between the ages of 3;1 and 5;11. The mean age of the 63 children who passed both the finiteness and subject-auxiliary inversion tasks was 4;10. The four morphemes tested by Ricci were aux *be*, copula *be*,

past tense *–ed* and 3rd person singular *–s*. Table 1.4 below displays the four morphemes tested by Ricci that were also tested by Brown and De Villiers & De Villiers, along with the acquisition order of each morpheme as calculated by Brown.

Morpheme	**Average Rank**
Uncontractible copula	6.50
Past regular	9.00
Third person regular	9.66
Uncontractible auxiliary	11.66

Table 1.4 Mean order of acquisition of 4 morphemes across three children, compiled by Brown, 1973 p272.

The results obtained from the De Villiers & De Villiers study reflected the relative order of acquisition found among the three children who participated in the Brown study for the four morphemes in question. The order in which the children began to consistently use each morpheme showed a remarkable degree of invariance between the two studies. The findings of Ricci, illustrated below in Figure 2, are also similar.

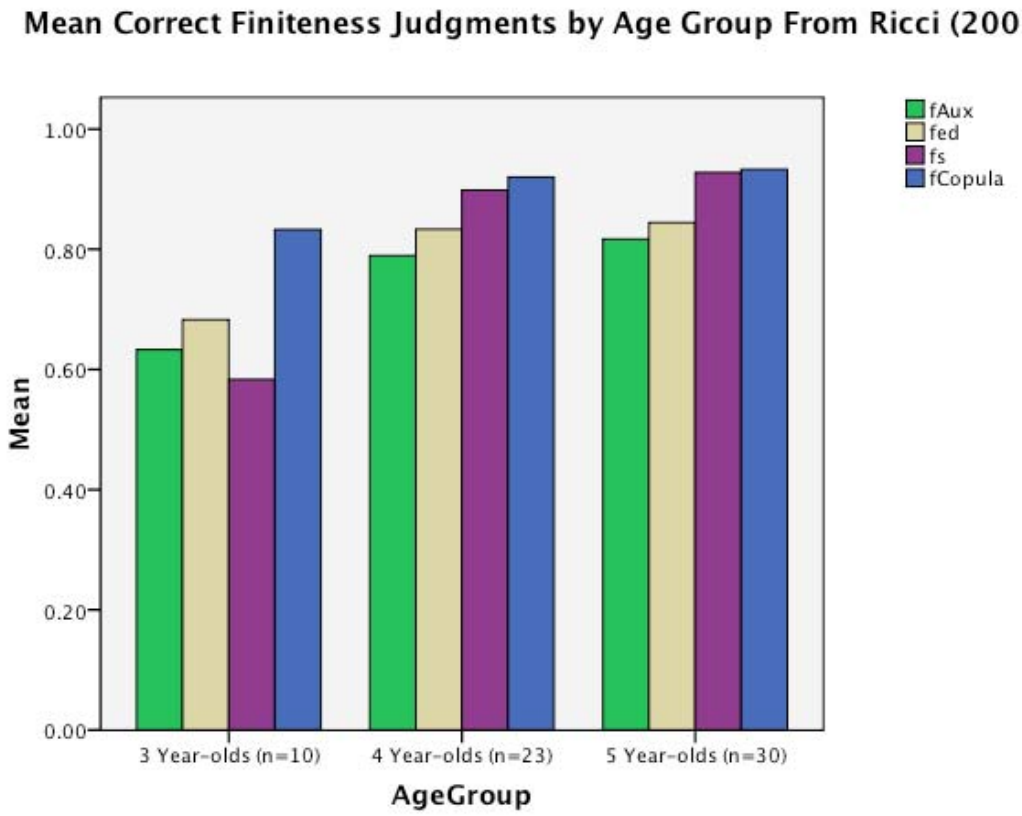

Figure 2 Mean Correct Finiteness Judgments by Age Group from Ricci (2009)

As in Brown and De Villiers & De Villiers, uncontractible copula arises first and uncontracted auxiliary is last. Ricci's children's judgments begin with third singular *–s* weaker than past *–ed*, as found in Brown and De Villiers & De Villiers, but later third singular *–s* judgments come to be stronger than those of past *–ed*. The study by Pine et al (2008) involved 11 English-speaking children between the ages of 1;10 and 3;0 and compared child provision rates for third person singular copula *be*, third person singular auxiliary *be*, and third person singular *–s* across three developmental periods. The first stage started when the child first produced two correct instances of each form. It resulted that during all three developmental stages, children provided third person singular copula

be at higher rates than third person singular auxiliary *be*, and third person singular auxiliary *be* at higher rates than third singular *–s*. This pattern in Pine's younger children, copula>auxiliary>3rd –s, matches the pattern found in Brown and De Villiers & De Villier's similarly aged children and also in the pattern found in Ricci's findings with slightly older children.

Section 1.5: Paradigm Regularity

The results previously found by Brown as well as those of De Villiers & De Villiers would seem to have a natural interpretation in terms of Yang's view of regularity in the input and Culicover's view of the role of initially memorized forms in the development of productive morphosyntax. The point is that the forms that have a more one-to-one, form to meaning correspondence should be more quickly learned. Further, children's judgments of them should most directly reflect syntactic competence as opposed to memory, processing ability or other considerations. Forms that are suppletive, and therefore likely to be memorized, may not be as representative of morphosyntactic competence, but nonetheless may be the first learned, if children initially memorize forms before using them productively, as proposed by Culicover.

We expect children's judgments of past tense *–ed* forms, for example, to reflect not only children's ability to combine the morpheme *–ed* with a verb stem, but also their ability to remember whether the form is regular or irregular. In the case of copula *be*, learning the forms *am, is, are, was, were* would seem to have little to do with productive grammatical rules and a great deal to do with associative memory and the lexicon. If Culicover is correct that children memorize not only adult-like versions of words, but

also stems and their inflections as single lexical items, the 5 suppletive forms of copula *be* could be learned quickly. Auxiliary *be*, meanwhile, would seem to require memorization of the forms of *be*, but also increased processing ability, relative to the other verbs, because children have to find the lexical verb to attach *–ing* to, which can be separate from the *be* form by negation, adverbs and other words. Only third singular *–s* seems to have something close to a one-to-one, form to meaning correspondence. From this perspective, we expect copula *be* to be learned first, as it is a straightforward memorization task, which is just what happens. Lastly, we expect auxiliary *be*, which requires not just the memorization of the *be* forms, but the extended processing resources necessary to find the *–ing* in the input to be most difficult, which is what we find. In the middle, we find past *–ed*, which is a combination of regular rule application and memorization, and third singular *–s*, which is simply productive rule learning. This order is important, because we will see later that children's judgments of finiteness and case seem to follow from these considerations.

Section 1.6: Research Questions

Based on the findings and theories previously discussed, we propose the following research questions:

1. Does the development of verb finiteness correlate with the development of Case marking, as nativist but not constructivist theories predict?

2. Do children prefer nominative case over accusative case pronouns with finite verbs, as Case Theory predicts?

3. Do children allow non-nominative case pronouns with verbs marked with third singular *–s*, as constructivist but not nativist theories predict?

4. Do distinct finiteness markers correlate across children with varying abilities to mark finiteness?

5. Does paradigm regularity play a role in the development of finiteness?

6. Are pronouns acquired in a lexically specific, gender-sensitive fashion, as proposed by Rispoli (1998a, 1998b), or are they acquired independently of gender?

Chapter 2: Experiment 1: Verb Finiteness

Section 2.0: Introduction and experimental overview

In order to answer our experimental questions, three experiments were performed. The first tests children's understanding of verb finiteness (Verb Finiteness Task), the second tests understanding of pronoun case (Pronoun Case Task) and the third tests both pronoun case and verb finiteness together (Case-Finiteness Task). The technique employed in all three experiments involves eliciting grammatical judgments from children. The subjects listen to the utterances from two puppets concerning an image, and the child selects which puppet said it better. The puppets are featured in images that correspond to the utterances presented to the child (see Appendix B to view the images).

Grammaticality judgment tasks were pioneered by McDaniel & Cairns (1990), McDaniel, Chiu & Maxfield (1995) and usually ask children for good vs. bad judgments of sentences that are either grammatical or ungrammatical. Pratt & Grinstead (2008) modify this format, presenting children with both the child-particular form (e.g. a non-nominative case subject) as well as the adult-like form (e.g. a nominative case subject)

and asking children to choose between them. They argue that this "Grammaticality Choice" format reduces the processing burden on children and show that children of the same age, tested on the same construction improve their scores and show less attrition using this format.

Based on results obtained during the first two weeks of piloting, several changes were made to the tests and the method in which they were given. Initially there were two puppets (a cat and a turtle), who are featured in the pictures along with a dog. It was decided to add a dog puppet to match the pictures and to ensure that the puppets do not refer to themselves in the third person, which could cause confusion for the child. There are only ever two puppets providing sentences for each picture; however, the puppets change according to the characters featured in the picture. For example, if the picture is of the dog watching television, then the cat and turtle will "speak." But if the picture contains a turtle, then the dog and cat will "speak." The puppets only "speak" about their own picture when they are referring to themselves in the first person.

The Verb Finiteness and Case-Finiteness Tasks both feature verbs with past and present inflections. In order to dispel any unnecessary confusion, these items were divided into separate sections. The present-tense items are presented first. When the past-tense section is reached during testing, the researcher then says to the subject, "Now the puppets are going to talk about things they remember doing yesterday, things that they've already done." This helps to ensure the subject's understanding of the change in verb inflection. The Pronoun Case Task only features items in the present tense.

During stimuli formation, each question and its two components were carefully examined in order to ensure that the child would be able to clearly hear and understand

the inflections on the words uttered by the researcher. Compare the following two test items:

(12) *He kicked the ball. vs He kick the ball.*

(13) *He kicked a ball. vs He kick a ball.*

In the first item, the sound of the verb ending blends with the sound of the following article. It is difficult to separate the two. However, when the definite article *the* is replaced with the indefinite article *a*, it becomes much easier to separate the two sounds and distinguish the verb inflection. All of our stimuli were created to follow the principle illustrated in (13).

In order to control for order of presentation effects, i.e. that the first or last items are easier or more difficult as a function of being presented in a particular order, there are three different orders within the two sections of the Finiteness and Case-Finiteness Tasks and within the entire Pronoun Case Task. For example, the tests in order A will have the items arranged differently than the items in orders B or C. Additionally, the tests will be given in a different order depending on whether the child is being tested with order A, B, or C. For example, if a child is being tested with Order A, then the first test he will take is the Case-Finiteness Task, followed by the Case Task and then Verb Finiteness Task. If a child was being tested with Order B, he would take the Case Task, then the Verb Finiteness Task, and then the Case-Finiteness Task. Children participating in Order C first take the Verb Finiteness Task, followed by the Case-Finiteness Task, and then the Pronoun Case task. A one-way ANOVA, with order of presentation as the between subjects variable, showed that there was no effect of order on the Verb Finiteness test ($f(2) = .539$, $p = .586$). Similarly, on the Case test, there was no effect of order ($f(2) =$

.496, p = .611). Finally, there was also no effect of order on the Case-Finiteness test (f(2) = 1.569, p = .219).

Section 2.1: Method

Participants

All participants selected for this task were monolingual native English speakers enrolled in daycare centers in Columbus, Ohio. After consent was obtained from the primary caregiver as well as the child, the testing was administered on-site at the daycare facility. The Verb-Finiteness task was the first to be taken in Order C, the second in Order B, and the third in Order A. Of the 59 children who took this test, 55 passed the filler items and were retained in the sample; however, only the data from the 48 children who passed all three tests were used in measurements. These 48 children were between the ages of 3;10 and 5;9, with a mean age of 4;10.

Procedures

For the Verb Finiteness Task, children were introduced to three puppets: a dog and a cat (both identified as male) and a turtle (identified as female). The children were told that all three were baby animals just learning how to talk, and that sometimes they did not say things the right way. For this task, the child and the administrator looked at a picture featuring at least one of the three puppets. Each of the baby animal puppets said something about the picture. The child was then asked to select which animal had said the sentence better.

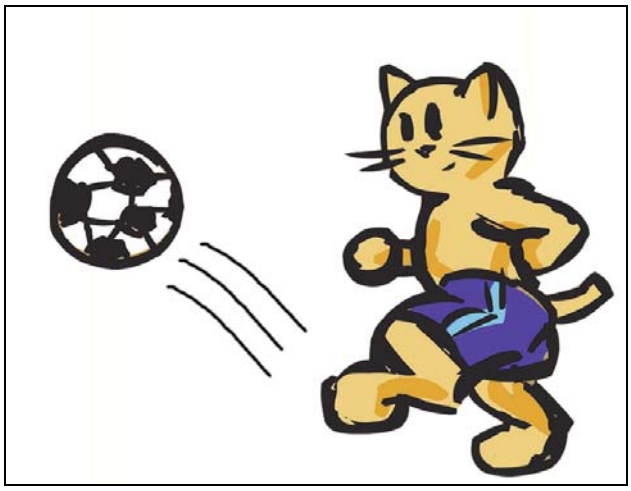

Figure 3 Sample picture shown to children during the Verb Finiteness Task

The following is a sample item from the Verb Finiteness Task (see Appendix 1 for a complete list of experimental stimuli):

Dog puppet: He kick**ed** a ball.

Turtle puppet: He kick a ball.

Test Administrator: Who said it better, the dog or the turtle?

The Verb Finiteness task contains 6 practice items to introduce the child to the test, 16 statements scored for accuracy, and 5 filler items, which were used to determine whether or not the child understood the test format and was focused on the task. During the practice section, children were allowed to listen to the sentence again if they answered incorrectly. If they answered correctly the second time they were praised. If their answer was incorrect a second time, they were given the correct answer along with an explanation of why it was correct. It is important to point out that after the practice items, the administrator told the child that sometimes the dog was right, sometimes the cat was right, and sometimes the turtle was right. This way, it was emphasized that there existed no pattern of correct and incorrect utterances. During the production of the

statements scored for accuracy, the child was complimented whether their response was correct or not.

The questions scored for accuracy consisted of pairs of sentences, where one contained correct finiteness marking and the other contained incorrect marking, either a bare stem or a bare present participle. Each sentence was a direct description of the picture shown to the child. Table 2.1 displays a breakdown of test components, as well as examples of the different types of verb forms used in this task.

	Correct Response	**Incorrect Response**	**Frequency in this test**
Past *–ed*	He paint**ed** a fence.	He paint a fence.	8
Aux *be*	She **is** dreaming.	She dreaming.	8

Table 2.1 Example Sentences from Verb Finiteness Task

The filler questions presented children with sentences that contrasted correct and incorrect nominal plural marking *–s* and the present progressive verb ending *–ing*, both of which are typically acquired by 3 years of age and both of which have previously been used successfully as filler items (cf. Rice, Wexler & Redmond 1999; McDaniels & Cairns 1990). The filler items consisted of 5 compared sentence pairs illustrated in (14):

(14) a. The turtle wants two cookies.
*The turtle wants two cookie.

b. *The turtle is dance.
The turtle is dancing.

c. The turtle was using a pencil.
*The turtle was use a pencil.

d. *The dog had two book.
The dog had two books.

e. The turtle was drinking.
*The turtle was drink.

The administrator utilized the filler statements as a measure of the child's understanding of the task. Close attention was given to the child's responses, and the fillers were used to discourage any erroneous pattern the child may have developed in responding to the questions. For example if the child seemed to favor one puppet over another, the administrator made sure to have the opposite puppet give the correct response during the filler questions. If children missed more than one filler question, their data was excluded from the pool.

Section 2.2: Results and Discussion

The overall results of the Verb Finiteness Task showed an average of 81.364% correctness across subjects. Participants' results showed a significantly higher performance ($p < .001$) on past tense *–ed* (86.85%) as compared to Aux *be* (75.86%). Table 2.2 displays the results of all participants, and Table 2.3 breaks down the results according to age, which are also illustrated in Figure 4.

	Average score
Past tense *–ed*	86.85% correct
Aux *be*	75.86% correct
Verb finiteness	81.36% correct

Table 2.2 Overall results of the Verb Finiteness Task

	Past tense *–ed*	**Aux *be***	**Overall Average Score**
3 year olds n= 9	78.41% correct	68.18% correct	73.30% correct
4 year olds n= 24	87.50% correct	75.83% correct	81.67% correct
5 year olds n= 15	91.18% correct	80.88% correct	86.03% correct

Table 2.3 Overall results of the Verb Finiteness Task by age

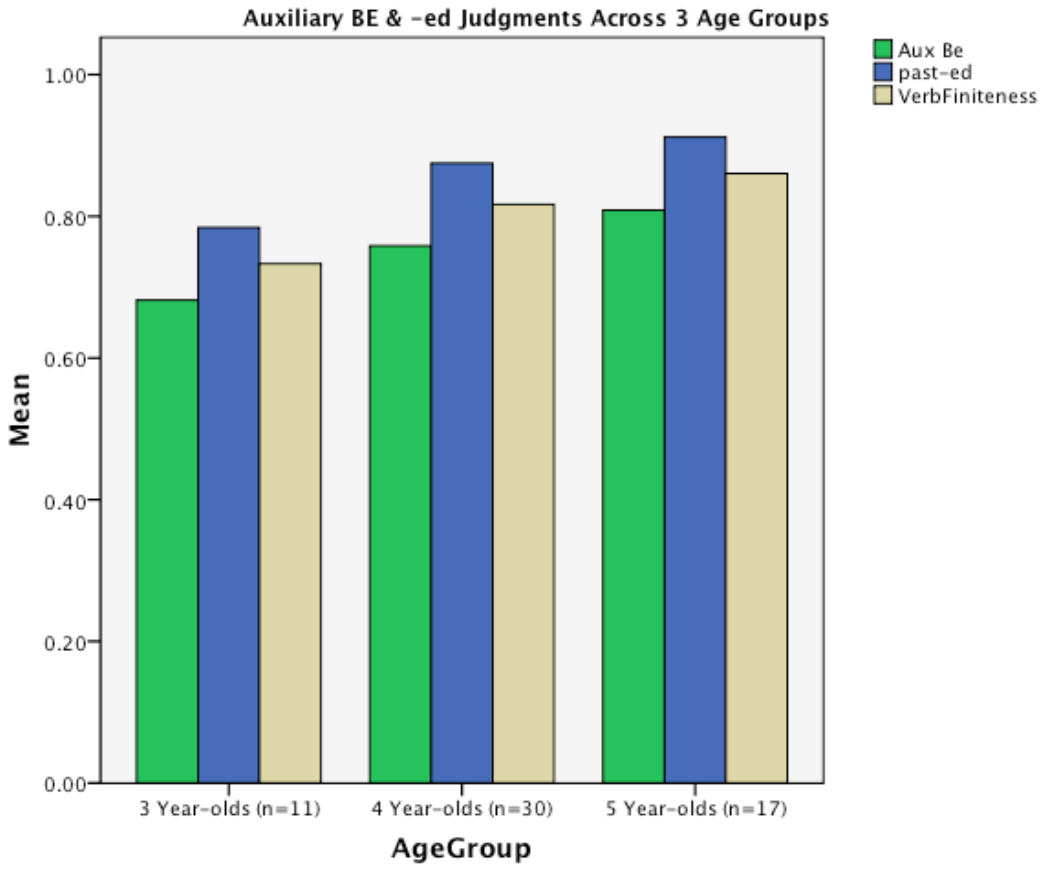

Figure 4 Auxiliary BE & *-ed* Judgments Across 3 Age Groups

Results showed that past –ed and Aux *be* scores correlated with one another, with age partialed out ($r = .470$, $p < .001$). This is important because it shows that different finiteness markers are growing in tandem across children of varying abilities, not as a

function of general maturity. Age and overall verb finiteness scores also correlated ($r = .351$, $p = 0.014$).

Section 2.3: Summary and Conclusion

Summarizing, judgments of the two finiteness markers are correlated across children of different ages and abilities in our cross-sectional sample, consistent with the nativist contention (cf. Rice, Wexler & Hershberger 1998) that multiple finiteness markers show correlated growth curves over time. Such a finding is inconsistent with constructivist arguments that adult-like knowledge of finiteness marking is fundamentally lexical and idiosyncratic. Further, consistent with the classical findings of Brown (1973) and De Villiers & De Villiers (1973), as well as Ricci (2009), children's proficiency with past tense –ed was superior to their proficiency with auxiliary *be*. This conclusion is consistent with the ideas of Yang and others that the regularity of the verbal paradigm determines its ease and rapidity of acquisition.

Chapter 3: Experiment 2: Pronoun Case

Section 3.0: Introduction

In the previous experiment, we saw that children showed variation in their production of verb finiteness markers. This is consistent with them being in the optional infinitive stage. Next we will examine the following research questions: Do children prefer nominative Case subjects over accusative Case subjects with inflected verbs? Is there a difference between masculine and feminine gender pronouns? Additionally, we

explore the question debated by Schütze and Pine as to whether children allow non-nominative case pronouns with verbs marked with third singular *–s*.

Section 3.1: Method

Participants

Of the 58 children who participated in this task, 48 passed the fillers and were retained in the sample. These 48 children also passed the Verb Finiteness Task and the Case-Finiteness Task. This test was the first to be taken if the child took the tests in Order C, the second if Order B, and the third if Order A. These 48 children were between the ages of 3;10 and 5;9, with a mean age of 4;10.

Procedures

The procedures for the Pronoun Case Task were the same as the Verb Finiteness Task. The only difference was the set of test questions as well as the corresponding pictures. If this was the second or third test taken, the child was reminded of the test structure and his role in determining which puppet said the correct response.

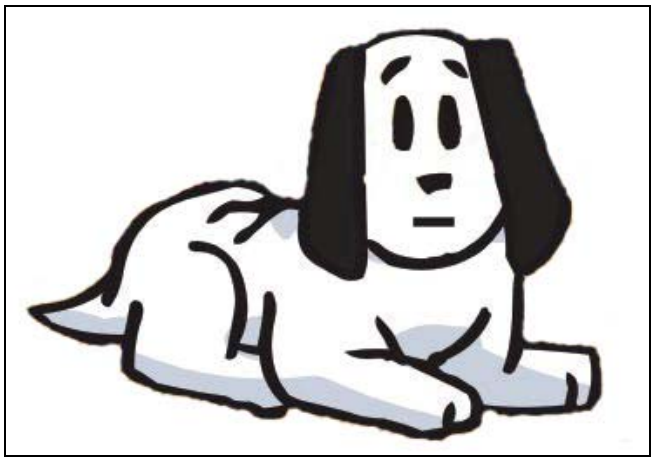

Figure 5 Sample picture shown to children during the Pronoun Case Task

The following is a sample test item from the Pronoun Case Task (see Appendix 2 for a complete list of stimuli):

Cat puppet: He is a dog.

Turtle puppet: Him is a dog.

Test administrator: Who said it better, the cat or the turtle?

The format for the Pronoun Case Task was similar to the Verb Finiteness Task in that it consisted of 6 practice items, 16 items scored for accuracy, and 5 filler items. Once again, the practice items were used to introduce the child to the test and were not scored for accuracy. After the practice section, it was reiterated that sometimes the cat was right, sometimes the turtle was right, and sometimes the dog was right, so paying close attention was essential.

The statements scored for accuracy consisted of two sentences, one featuring a nominative case pronoun and the other an accusative case pronoun. In all these statements, verb finiteness was held constant. Of the 16 experimental items, 8 used 3rd singular –s as the finite form and 8 used copular *be* as the finite form. Similarly, of the 16 items, 8 used masculine pronouns (*him* vs. *he*) and 8 used feminine pronouns (*she* vs. *her*). Table 3.1 gives examples of the questions in the Pronoun Case Test:

	Correct Response	**Incorrect Response**	**Frequency in Test**
She-her	She is a turtle.	Her is a turtle.	4
She-her	She loves the puppy.	Her loves the puppy.	4
He-him	He is a dog.	Him is a dog.	4
He-him	He watches the ball.	Him watches the ball.	4

Table 3.1 Sample sentences from the Pronoun Case Task

Section 3.2: Results and Discussion

The overall results of the Pronoun Case Task showed 81% correctness across subjects. Participants' results showed very similar performance with she-her (79.66%) compared with he-him (79.45%). Table 3.2 shows the breakdown of all participants, and Table 3.3 shows the results divided by age, which is also illustrated in Figure 6.

	Average Score
She-her	79.66% correct
He-him	79.45% correct
Overall Case	79.56% correct

Table 3.2 Overall Results of the Pronoun Case Task

	She-Her	**He-Him**	**Overall Average Score**
3 year olds n= 9	58.75%	68.75%	63.75%
4 year olds n= 24	80.86%	80.08%	80.47%
5 year olds n= 15	89.71%	84.56%	87.13%

Table 3.3 Overall Results of the Pronoun Case Task by age

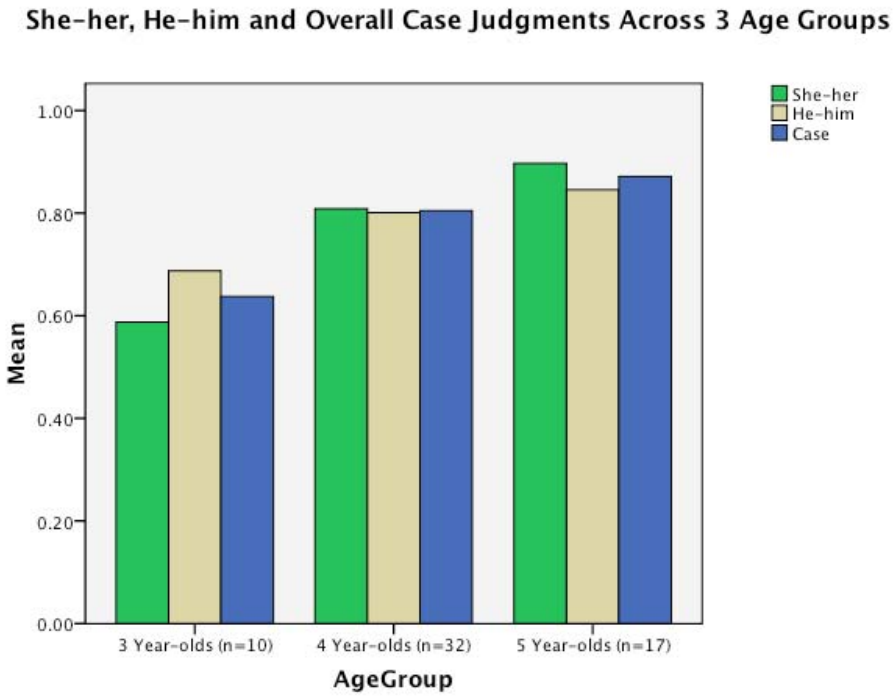

Figure 6 She-her, He-him, and Overall Case Judgments Across 3 Age Groups

Results show that judgments of the she-her distinction and of the he-him distinction are highly correlated, when age is partialed out ($r = .655$, $p < .001$), and that there was no significant difference between the overall mean correct scores for judgments between *she* and *her* vs. judgments between *he* and *him* (for a paired samples t-test, $t(47) = .707$, $p = .483$). Further, age correlates with overall case judgments ($r = .379$, $p = .003$).

Section 3.3: Summary & Conclusion

The results of this experiment reveal that the judgments of the she-her distinction and of the he-him distinction are not different and are, in fact, highly correlated, even when age is partialed out. This close correlation cannot be explained by the "Double-Cell Effect" of Rispoli (1998a, 1998b), which assumes that the nature of the pronoun

paradigm is responsible for children's error patterns. Furthermore, it is inconsistent with the constructivist claim that the co-occurrence of two grammatical elements in the adult input is the fundamental mechanism for explaining why they co-occur in the child output. That is, since *she* and *he* do not simultaneously occur with verbs marked for third singular *–s* or with the third singular copular form *is* in the adult input, because they would constitute a plural subject with a singular verb, the constructivist account cannot explain the results of this judgment task. Nativist accounts attribute the assignment of case to the syntactic position of the subject and the abstract finiteness properties of the verb. Since the case feature of a pronoun is independent of its gender, syntactic theory would predict children's judgments to be about the finiteness-case relationship in the stimuli. This relationship should be independent of gender, since gender plays no role in Case theory.

In addition, the claim that children do not allow non-nominative case pronouns to occur with verbs marked with 3rd singular *–s* is found to be incorrect. Schütze claims that this phenomenon should occur so rarely (less than 10% of the time) that instances when it does occur can simply be dismissed as noise in the data. In this experiment, we found that while 79% of the children's judgments preferred nominative case pronouns paired with finite verbs, the remaining 21% allowed the combination of accusative case pronouns and finite verbs. Specifically, there were 18 opportunities for children to choose either a nominative or an accusative subject with a verb on this test. 9 of them occurred with a verb marked for third person, singular –s. On average, the 59 children who took this test (the larger sample – not just those who took and passed all three tests) chose the non-nominative (accusative) case pronominal subject 2.79 times, which is statistically greater

than 0 ($t[58] = 11.882$, $p < .001$) in our sample. Constructivists were correct in that non-nominative subjects can occur with 3rd *–s*.

Chapter 4: Experiment 3: Case-Finiteness

Section 4.0: Introduction

Summarizing, on the Verb Finiteness Task, we saw that children showed variation in their judgments of verb finiteness markers, which became more adult-like as they matured. These findings are consistent with them being in the optional infinitive stage. We also saw that aux *be* and *–ed* judgments correlate with one another, consistent with the idea that verb finiteness grows independently of morphological form. On the Pronoun Case Task, it was revealed that, overall, children preferred nominative case subjects over accusative case subjects paired with inflected verbs. Having explored some of the case-internal and finiteness-internal relationships, we now move on to investigate the relationships between the two forms, when presented together, co-varying case and finiteness.

Section 4.1: Method

Participants

Of the 54 children who took this test, 48 passed the fillers and also successfully completed the Verb Finiteness and Pronoun Case Tasks. The Case-Finiteness Task was the first to be taken in Order A, the third to be taken in Order B, and the second to be taken in Order C. These 48 children were between the ages of 3;10 and 5;9, with a mean age of 4;10.

Procedures

The procedures for the Case-Finiteness Task were the same as the previous two tests, with the only difference being the set of test questions and the corresponding pictures. If this was the second or third test taken, the child was reminded of the test structure and his role in determining which puppet said the correct response.

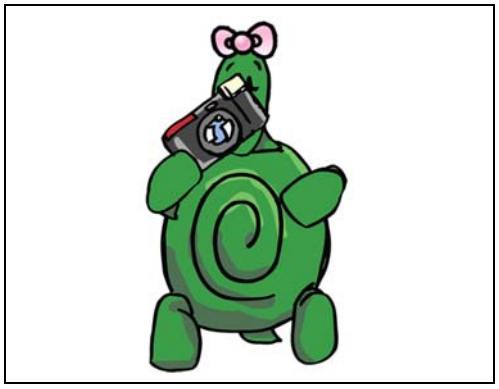

Figure 7 Sample picture shown to children during the Case-Finiteness Test

The following is a sample item from the Case-Finiteness Task (see Appendix 3 for a complete list of stimuli):

Dog puppet: She takes pictures.

Cat puppet: Her take pictures.

Test administrator: Who said it better, the dog or the cat?

The format for the Case-Finiteness Task was similar to that of the Pronoun Case and Verb Finiteness Tasks, though it was slightly longer. It contained 6 practice items, 21 items scored for accuracy, and 8 filler items. Once again, the practice items were used to introduce the child to the test and were not scored for accuracy. After the practice section, it was reiterated that sometimes the cat was right, sometimes the turtle was right, and sometimes the dog was right, so paying close attention was essential.

The statements scored for accuracy consisted of two statements, one featuring a nominative case pronoun paired with an inflected verb and the other featuring an accusative case pronoun coupled with a nonfinite verb. Table 4.1 shows the breakdown of the questions in the Case-Finiteness Task:

	Correct Response	**Incorrect Response**	**Frequency in Test**
3rd *–s* –He	He watches TV.	Him watch TV.	3
3rd *–s*—She	She takes pictures.	Her take pictures.	3
"am"	I am sad. / I am happy.	Me am sad. / I happy.	3
Past *–ed*--He	He danced.	Him dance.	4
Past *–ed*—She	She helped a dog.	Her help a dog.	4
Object case	The dog watched him.	The dog watch he.	4

Table 4.1 Sample sentences from the Case-Finiteness Task

Section 4.2: Results and Discussion

The overall results of the Case-Finiteness Task show 85.22% correct judgments. For the measures that relate to subject case (all but the object case measures) the mean correct percentage was 80.47%. Overall, children preferred the combination of nominative case pronouns and finite verbs above chance, which was 50% on this test ($t(49) = 16.983$, $p < .001$). Participants' results showed a similar performance between "am" at 87.67% correctness and Object-Case at 87.5% correctness. A similar performance is also observed between 3rd *–s* at 85% correctness and past *–ed* at 82% correctness. Table 4.2 shows the breakdown of the 48 participants that passed the fillers in all three tasks. Table 4.3 shows these results divided by age.

	Average Score
3rd *–s*	85% correct
"*am*"	87.67% correct
Past *-ed*	82% correct
Object-Case	87.5% correct
Overall Case-Finiteness	85.22% correct

Table 4.2 Overall Results of the Case-Finiteness Task

	3rd *–s*	***"am"***	**Past *–ed***	**Object Case**	**Overall Average Score**
3 year olds n=9	80.30%	78.79%	76.62%	79.55%	78.66%
4 year olds n=24	86.11%	88.89%	81.55%	87.50%	85.69%
5 year olds n=15	86.67%	92.22%	86.67%	93.33%	89.28%

Table 4.3 Overall Results of the Case-Finiteness Task by age

With respect to the question of whether verb finiteness markers develop in a parallel fashion, it is worth comparing multiple measures of the same finiteness markers between the Verb Finiteness Task and this task, though the task demands were different, as a means of validating the measure.

Table 4.4 gives percent correct judgments of past tense *–ed* as observed in both the Verb Finiteness and Case-Finiteness Tasks, showing similar performance. Statistical analysis shows that though performance on the Verb Finiteness Task (mean correct =

7.17 of 8 possible) is better than on the Case-Finiteness Task (mean correct = 5.73 of 8 possible– $t(47) = -6.638$, $p < .001$), the results nonetheless correlate, with age partialed out ($r = .354$, $p = .015$). This validates what was shown earlier on the Verb Finiteness Task, that children's judgments of –ed and aux *be* scores correlated, cross-validating the results of Rice, Wexler & Hershberger (1998). The fact that these results from two independent tests of the same 48 children correlate suggest that the tests are tapping the same underlying knowledge of finiteness.

	Average Score
3rd *–ed* in Verb Finiteness Task	89.58% correct
3rd *–ed* in Case-Finiteness Task	81.85% correct

Table 4.4 Comparison of 3rd *–ed* scores in the Verb Finiteness and Case-Finiteness Tasks

The Case-Finiteness Task also yielded interesting results with regard to the observations made in Rispoli (1998a, 1998b) who finds in spontaneous production that children make more errors in feminine than in masculine subject pronoun case. He attributes this difference to the "Double Cell Effect", which is to say the fact that there are three occurrences of "her" in the English pronoun paradigm (accusative, oblique and possessive) versus only two occurrences of "him" (accusative and oblique). According to Rispoli, this greater representation of "her" in the input leads children to more frequently use it with nonfinite verbs. The results from the Case-Finiteness Task are similar to those of the Pronoun Case Task in that there was no difference between masculine and feminine 3rd singular pronoun choices.

Figure 8 shows that children demonstrated no preference for masculine or feminine pronouns on the Case-Finiteness Task (t[49] = .134, p = .894).

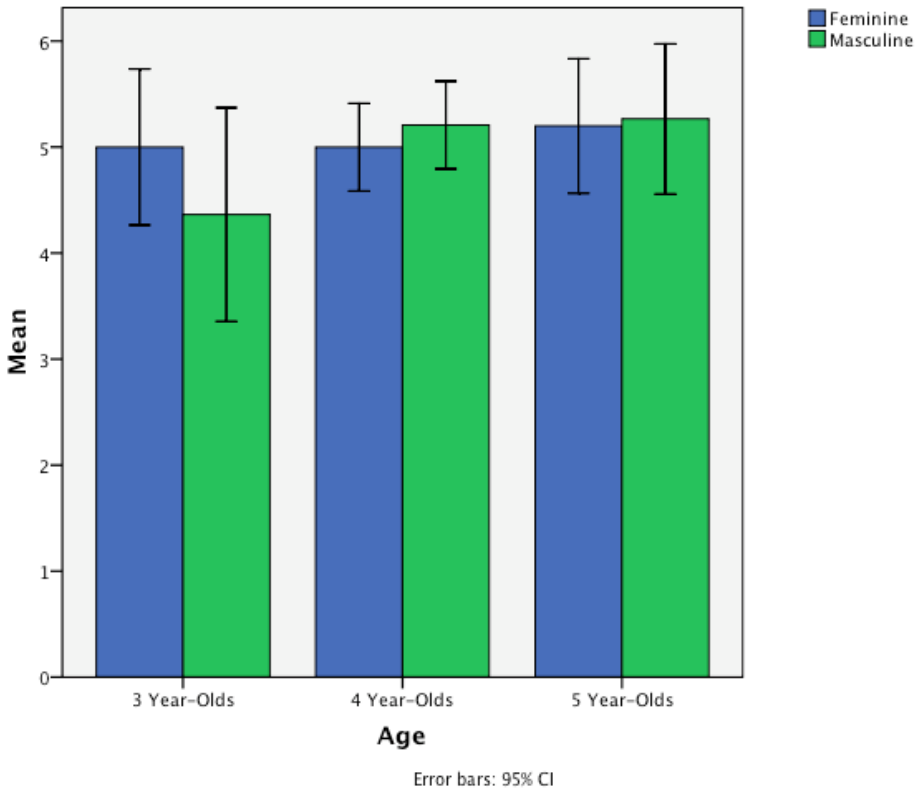

Figure 8 Comparison of Masculine-Feminine Pronoun Judgment on the Case-Finiteness Task

In short, whether verb finiteness is held constant, as on the Pronoun Case Task, or whether it co-varied with nominative/non-nominative pronoun forms, as on the Case-Finiteness Task, the children in our sample do not show a preference in their judgments for either masculine or feminine non-nominative subjects, as argued by Rispoli.

Section 4.3: Summary and Conclusion

Results show that even in a population of children that varied in its adult-like use of verb finiteness and pronominal case marking, children preferred sentences with

nominative case pronouns and finite verbs, consistent with nativist theories that assert a connection between finiteness and pronominal case in subject position. Even the three year-olds in the sample seemed to be performing at relatively high levels of proficiency at choosing finite verbs paired with nominative case subjects.

Further, in contrast to the findings reported by Rispoli (1998a, 1998b), these results showed, as did those of the Pronoun Case Task, that the children in our sample showed no bias towards greater errors with feminine pronouns.

Chapter 5: Relationships of Judgments of Pronoun Case and Finiteness

Returning to our research questions, we are now in a position to present some tentative answers. Each of the following sections deals with one of the six research questions presented in Section 1.6, and includes the conclusions we have drawn from the results of our testing.

Section 5.0: Does the development of verb finiteness correlate with the development of case?

For the 48 children who took our test, scores on the Pronoun Case Task correlated with scores on the Verb Finiteness Task ($r^2 = .145$, $p = .008$; with age partialed out, $r = .305$, $p = .037$), as illustrated in the Figure 9.

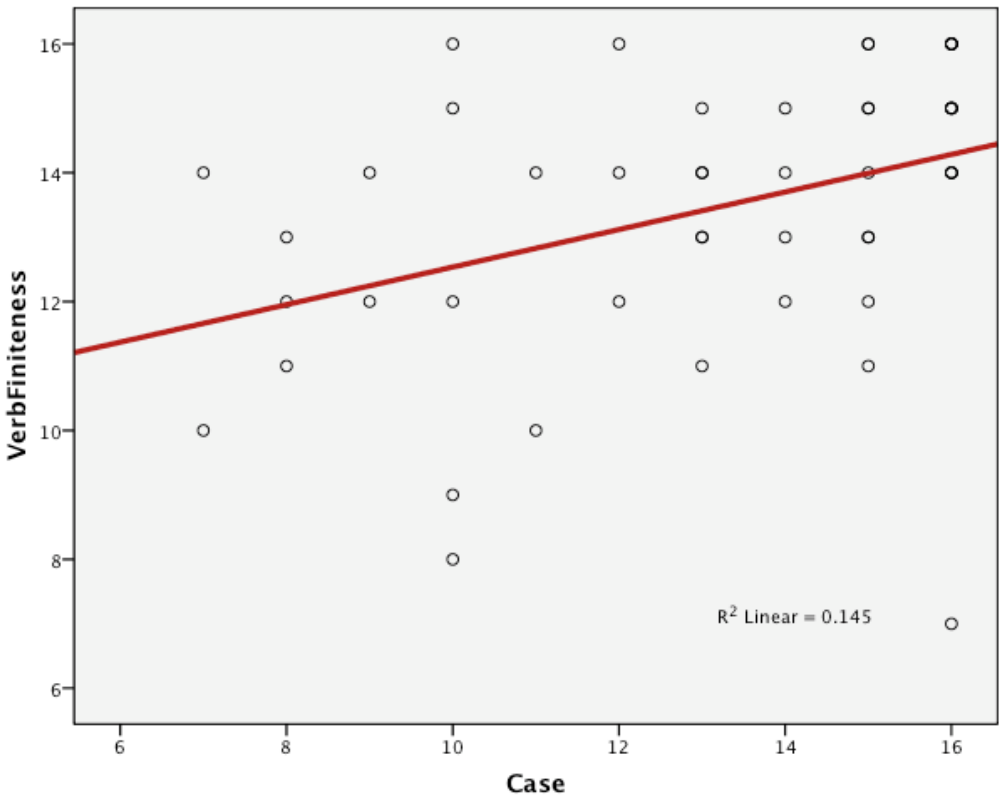

Figure 9 Correlation of scores from Pronoun Case Task with Verb Finiteness Task

Constructivist theories posit that case-finiteness contingencies are the result of co-occurrence of forms in the input, as a function of frequency. This predicts, along with nativist accounts, that children should prefer nominative pronouns paired with finite verbs. However, constructivist accounts do not predict that children's judgments of finiteness marking of two morphemes, such as aux *be* and third *–ed* (Verb Finiteness Task) should correlate with children's judgments of the pronominal case of subjects that occur with copula *be* and third *–s* (the finiteness markers present, though always finite, on the Pronoun Case Task). Nativist theories, on the other hand, do make this prediction because tense marking is seen as an abstract grammatical property of the verb, independent of tense and lexical item. Our results are consistent with nativist accounts.

Section 5.1: Do children prefer nominative case over accusative case pronouns with finite verbs, as Case Theory predicts?

The results of this project show that yes, children prefer nominative case with finite verbs. The percentage correct across children were near 80% both tests that varied pronoun type (79.56% in the Pronoun Case Task, and 85.22% in the Case-Finiteness Task). These percentages are too high to have simply occurred by chance. Correlations from the Case-Finiteness task show that children preferred the combination of nominative case pronouns and finite verbs ($t(49) = 16.983$, $p < .001$).

Section 5.2: Do children allow non-nominative case pronouns with verbs marked with third singular *–s*?

Yes; 79% of all children who participated in the Pronoun Case Task preferred the adult-like combination of nominative case pronoun and finite verbs. That leaves 21% that accepted the accusative case pronoun paired with a finite verb. This number is too high to simply be dismissed as noise in the data.

Constructivists were correct in their claim that non-nominative subjects can occur with 3rd singular *–s*; however, this does not refute the central claim that finiteness and case are grammatically connected. The results of the Pronoun Case Task and the Verb Finiteness Task reveal that verb finiteness and pronominal case scores are correlated, as predicted by nativist accounts.

Section 5.3: Does paradigm regularity play a role in the development of finiteness?

Results of the Verb Finiteness Task were consistent with the findings of Brown (1973), De Villiers & De Villiers (1973), and Ricci (2009), which showed that regular and memorized morphemes were first used more consistently than the verbs forms that required more processing to retrieve from the input. In the Verb Finiteness Task, children demonstrated correct judgments of past *–ed*, a morpheme requiring a combination of regular rule application and memorization, more often than auxiliary *be*, which requires memorization of the *be* forms in addition to extended processing to retrieve *–ing* from the input.

Section 5.4: Do distinct finiteness markers correlate across children with varying abilities to mark finiteness?

The results of the Verb Finiteness Task showed that past –ed and Aux *be* scores correlated with one another, with age partialed out ($r = .470$, $p < .001$). This is important because it shows that different finiteness markers are growing in tandem across children not as a function of general maturity. Further, the past –ed scores on the Verb Finiteness Task correlated with the past –ed scores on the Case-Finiteness Task, with age partialed out. This serves as a validation of the Verb Finiteness results, because the Case-Finiteness task had distinct task demands and still produced correlated results.

Section 5.5: Are pronouns acquired independently of gender?

Results from the Pronoun Case Task and the Case-Finiteness Task showed that whether verb finiteness was held constant or whether it covaried with nominative and

non-nominative pronoun case forms, the children in our sample showed no tendency toward greater error with feminine pronouns, as reported by Rispoli. This suggests that, at least as measured on our tasks, verb finiteness, and not independent knowledge of the English pronominal paradigm, is associated with correct pronominal subject case forms. The difference between these results and those of Rispoli may stem from the fact that these experiments tested a large group of children and consequently the results did not reflect the idiosyncratic properties of a few children producing spontaneous production data, as did the studies Rispoli depends on to make his argument. If it is true that the gender difference found by Rispoli were fundamentally dependent on the input children received, it seems likely that the large number of children tested in this project simply washed out such input-dependent idiosyncrasies. Further analysis of the individual data may bear this speculation out.

Section 5.6: Conclusion

The observation of the optional infinitive stage in child English has raised some interesting questions regarding the existence of a grammatical connection between the case of subject pronouns and the finiteness marking on verbs. The goal of our research was to test nativist and constructivist theories on this subject, and to determine whether or not such a grammatical connection exists between case and finiteness. Results were consistent with nativist hypotheses, which predicted a correlation between children's judgments of pronoun case and finiteness marking, though not always in the ways predicted by the ATOM model. Results were inconsistent with constructivist accounts of language development, which are based on the contention that children's utterances are

based on the frequency of co-occurrence in the input. With respect to pronominal gender, results appear to contradict Rispoli's findings, possibly based on the small sample size associated with the spontaneous production data is based on.

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Chapter 7: Appendices

Appendix A: Stimuli Sentences

A.1 Verb Finiteness Grammaticality Judgment Task

Practice
1a. The cat sees two birds.
1b. The cat sees two bird.
2a. The boy is wash the animals.
2b. The boy is washing the animals.
3a. The dog wants two carrots
3b. The dog wants two carrot.
4a. The cat is smile.
4b. The cat is smiling.
5a. The girl is feed the dog.
5b. The girl is feeding the dog.
6a. The dog sees two elephants.
6b. The dog sees two elephant.
Task
1a. He is holding the hat.
1b. He holding the hat.
2a. He dancing.
2b. He is dancing.
3a. He laughing.
3b. He is laughing.
4a. The turtle wants two cookies.
4b. The turtle wants two cookie.
5a. She eating food.
5b. She is eating food.
6a. She is dreaming.
6b. She dreaming.
7a. He is writing.
7b. He writing.
8a. The turtle is dance.
8b. The turtle is dancing.

9a. He is running.
9b. He running.
10a. She is playing soccer.
10b. She playing soccer.
11a. He painted a fence.
11b. He paint a fence.
12a. The turtle was using a pencil.
12b. The turtle was use a pencil.
13a. He color a picture.
13b. He colored a picture.
14a. She opened her mouth.
14b. She open her mouth.
15a. She watched a cat.
15b. She watch a cat.
16a. The dog had two book.
16b. The dog had two books.
17a. He hug a teddy bear.
17b. He hugged a teddy bear.
18a. He kicked a ball.
18b. He kick a ball.
19a. He looked at the turtle.
19b. He look at the turtle.
20a. The turtle was drinking.
20b. The turtle was drink.
21a. She opened a box.
22a. She open a box.

A.2 Pronoun Case Grammaticality Judgment Task

Practice
1a. The girl is feeding the dog.
1b. The girl is feed the dog.
2a. The cat is wear shorts.
2b. The cat is wearing shorts.
3a. The cat wants two apples.
3b. The cat wants two apple.
4a. The dog sees two elephant.
4b. The dog sees two elephants.
5a. The boy is wash the animals.
5b. The boy is washing the animals.
6a. The dog wants two carrots.
6b. The dog wants two carrot.
Task
1a. He is a dog.
1b. Him is a dog.
2a. Him is a cat.
2b. He is a cat.
3a. Her is a turtle.
3b. She is a turtle.
4a. The cat has two balls.
4b. The cat has two ball.
5a. Him is orange.
5b. He is orange.
6a. She is green.
6b. Her is green.
7a. He is angry.
7b. Him is angry.
8a. The dog has two balloon.
8b. The dog has two balloons.

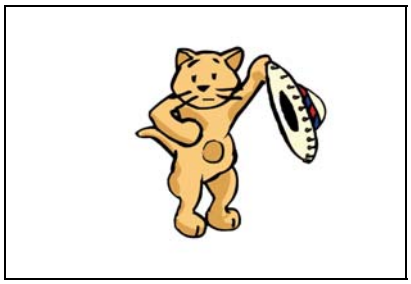
9a. She is tired.
9b. Her is tired.
10a. She is happy.
10b. Her is happy.
11a. He plays with friends.
11b. Him plays with friends.
12a. The turtle is eating.
12b. The turtle is eat.
13a. Him sleeps.
13b. He sleeps.
14a. He holds a camera.
14b. Him holds a camera.
15a. She loves the puppy.
15b. Her loves the puppy.
16a. The dog plays with block.
16b. The dog plays with blocks.
17a. Her eats the food.
17b. She eats the food.
18a. He watches the ball.
18b. Him watches the ball.
19a. Her sings loudly.
19b. She sings loudly.
20a. The dog is drawing.
20b. The dog is draw.
21a. She cleans the car.
21b. Her cleans the car.

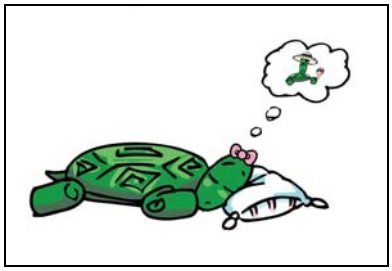
A.3 Case-Finiteness Grammaticality Judgment Task

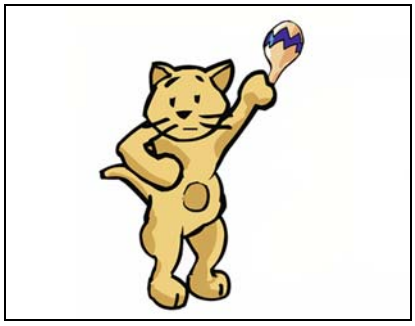
Practice
1a. The cat is smiling.
1b. The cat is smile.
2a. The dog sees two elephant.
2b. The dog sees two elephants.
3a. The cat is wearing shorts.
3b. The cat is wear shorts.
4a. The cat wants two apple.
4b. The cat wants two apples.
5a.The girl is feeding the dog.
5b. The girl is feed the dog.
6a. The cat sees two bird.
6b. The cat sees two birds.
Task
1a. He watches TV.
1b. Him watch TV.
2a. Him paint a picture.
2b. He paints a picture.
3a. Him use the brush.
3b. He uses the brush.
4a. The turtle is singing.
4b. The turtle is sing.
5a. Her look at the ball.
5b. She looks at the ball.
6a. She takes pictures.
6b. Her take pictures.
7a. She wants cookies.
7b. Her want cookies.
8a. The dog is run.
8b. The dog is running.
9a. I am happy.
9b. I happy.
10a. I am sad.
10b. Me am sad.
11a. I am tired.
11b. Me tired.
12a. The turtle is playing soccer.
12b. The turtle is play soccer.
13a. My am angry.
13b. I am angry.
14a. I cleaned a car.
14b. Me clean a car.
15a. The dog is dance.
15b. The dog is dancing.
16a. Him kick a ball.
16b. He kicked a ball.
17a. He danced.
17b. Him dance.
18a. Him open his mouth.
18b. He opened his mouth.
19a. The dog had two friends.
19b. The dog had two friend.
20a. She jumped up and down.
20b. Her jump up and down.
21a. Her finish her food.
21b. She finished her food.
22a. The dog had two cameras.
22b. The dog had two camera.
23a. Me smile at the dog.
23b. I smiled at the dog.
24a. The dog watched him.
24b. The dog watched he.
25a. The dog love she.
25b. The dog loved her.
26a.The turtle had three drinks.
26b. The turtle had three drink.
27a. The dog hugged me.
27b. The dog hug I.
28a. The boy wash my.
28b. The boy washed me.
29a. The cat had two hat.
29b. The cat had two hats.

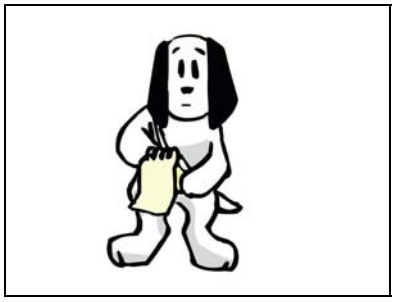
Appendix B: Stimuli Pictures

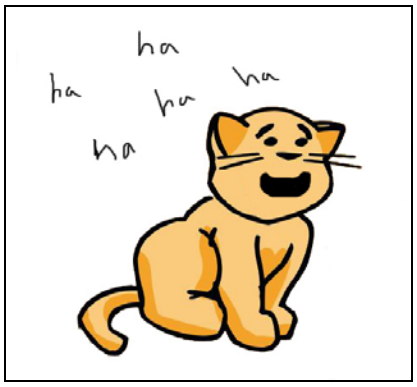
B.1 Verb Finiteness Grammaticality Judgment Task

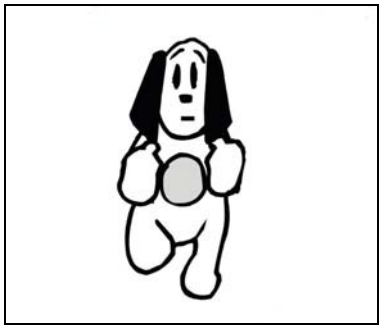


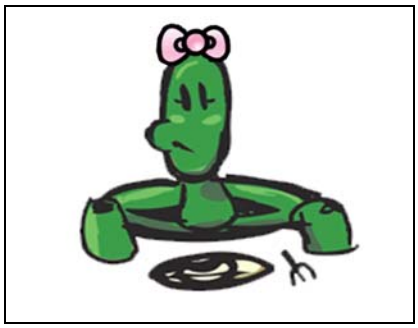


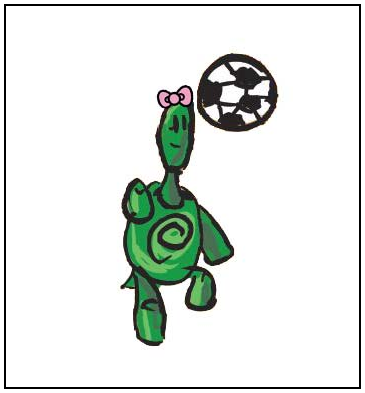


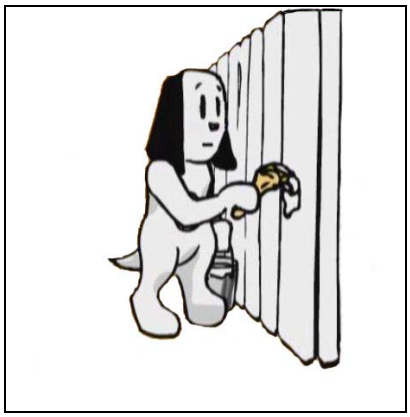


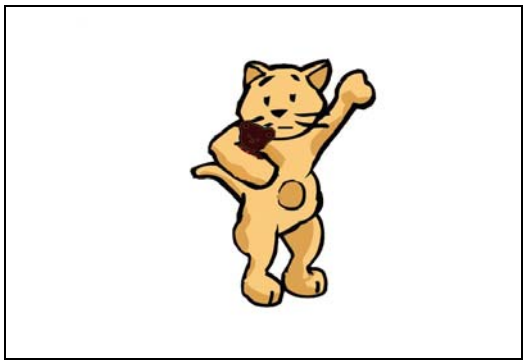


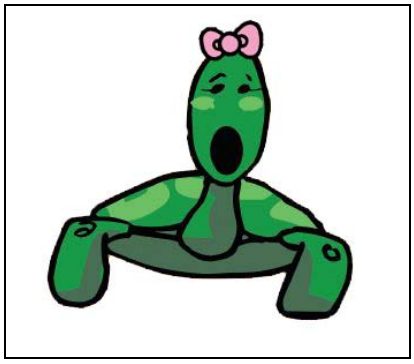


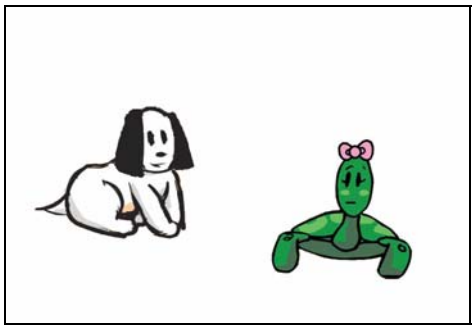


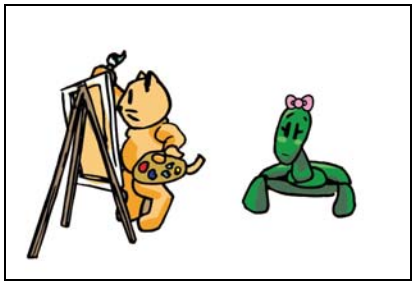


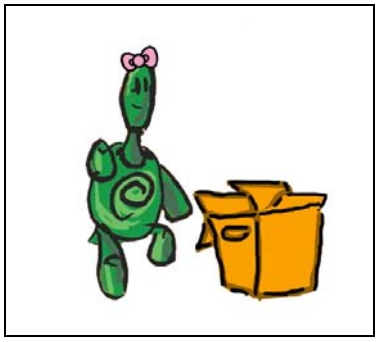




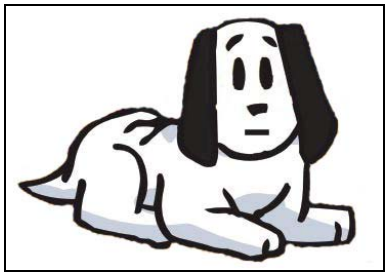


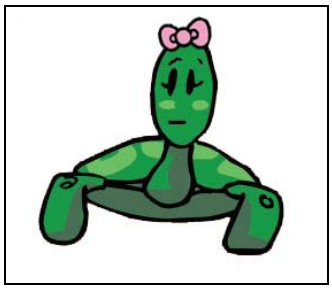


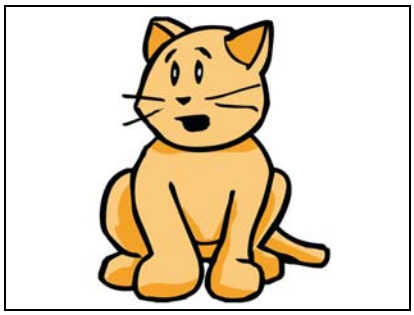


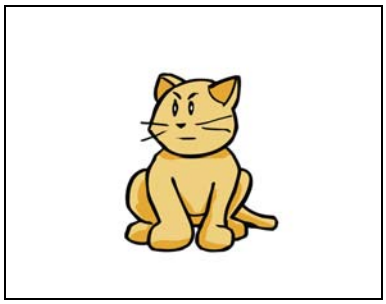


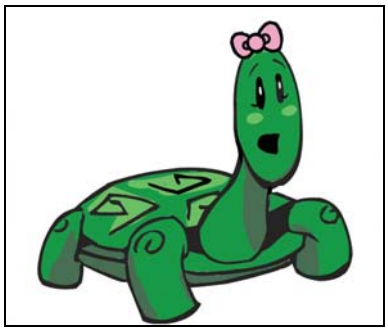
B.2 Pronoun Case Grammaticality Judgment Task

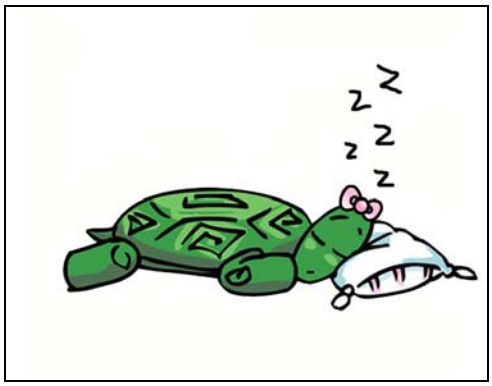


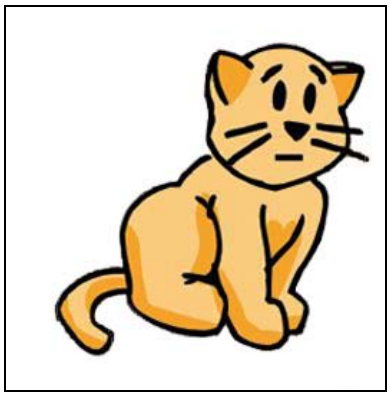


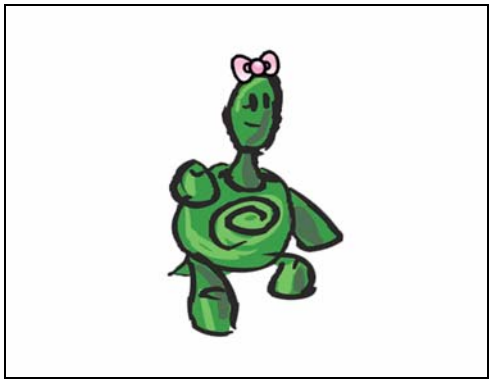


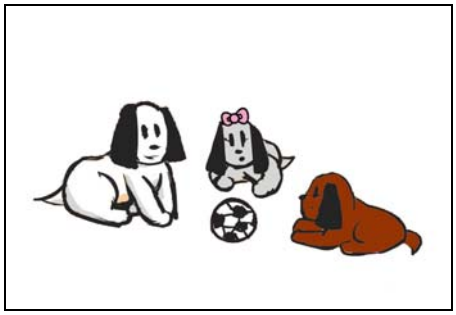


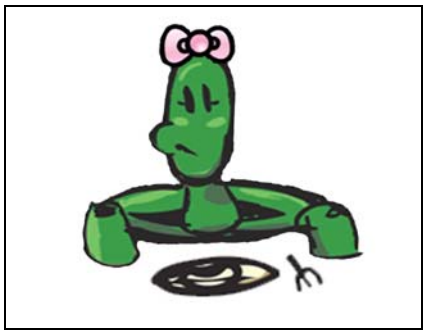










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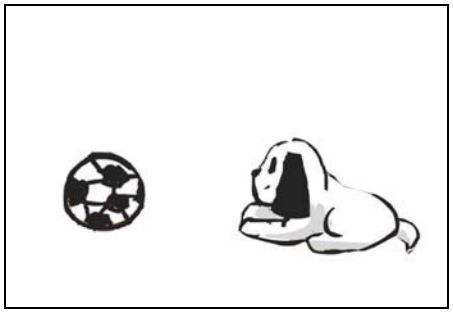

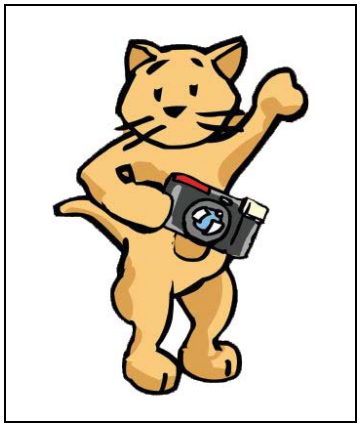

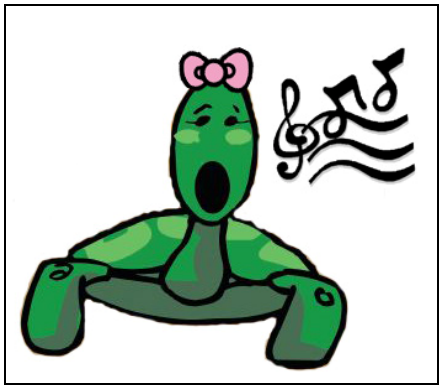

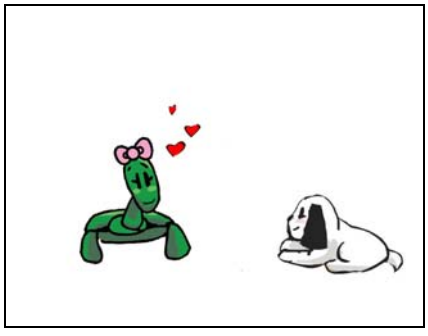

B.3 Case-Finiteness Grammaticality Judgment Task